Remarks

Claims 5 and 23-48 remain in the present application. Claims 1-4 and 6-22 were previously cancelled. Claims 5 and 23-36 have been amended without prejudice, and new claims 37-48 have been added. The claims as amended are directed to compounds and pharmaceutical compositions. Specification support for the pharmaceutical compositions can be found, for example, on pages 406-408. Applicants reserve the right to prosecute the canceled subject matter, including the method of treatment and prophylaxis of autoimmune and inflammatory disorders, in a continuation application.

Improper Markush Rejection

Original claims 5, 23, 24 and 26-36 were rejected under a judicially created doctrine as being drawn to an improper Markush group allegedly because the genus of compounds lack a significant common structural feature and therefore is directed to patentably distinct and independent inventions. According to the Examiner's suggestion, Applicants have amended the claims to restrict the genus to compounds wherein B, D, and E are oxygen, and wherein there are no additional ring formations. Applicants reserve the right to prosecute the canceled subject matter in a divisional application.

Rejections under 35 U.S.C. § 112, First Paragraph

Original claims 5, 23, 24 and 26-36 were rejected under 35 U.S.C. §112, first paragraph, allegedly because the specification is not enabled for the broad genus of compounds. The Office Action appears to present the position, now disfavored by the U.S. Patent and Trademark Office, that claims should be restricted to the embodiment of presented working examples, and that nothing short of clinical trials is sufficient to prove the utility of a pharmaceutical invention. This is not the law. In fact, there is no requirement that a patent application contain any working examples whatsoever. Applicants draw the Examiner's attention to the Utility Examination Guidelines made effective July 14, 1995.

The "undue experimentation" or "Foreman" factors from In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), while normally used for enablement rejections

under 35 U.S.C. 112, first paragraph, are particularly apropos in this instance. In Wands, the Court reversed the U.S.P.T.O.'s rejection that claims for detecting Hepatitis B surface antigens were non-enabling (Id., 8 USPQ2d at 1407). "The Court held that the specification was enabling with respect to the claims at issue and found that 'there was considerable direction and guidance' in the specification; there was a 'high level of skill in the art at the time the application was filed;' and 'all of the methods needed to practice the invention were well known." (MPEP, Sec. 2164.01(a) citing In re Wands , 858 F.2d at 740, 8 USPQ2d at 1407). As in Wands, methods needed to practice the invention, i.e., to make and use it, are well known in the art. While the Examiner implicitly acknowledged that the specification teaches one how to make the compounds of the present invention, the Examiner alleged that the specification does not teach a skilled artisan how to use the compounds of the present invention. Applicants respond that the art is replete with references that teach various assays both in vivo and in vitro to assess the anti-inflammatory effects of a pharmaceutical agent. The Examiner is directed to references containing this information, which are given in the Background of the Invention (page 8, line 30 to page 10, line 5).

Claims 23, 24 and 26-36 are rejected for lack of enablement for treatment of autoimmune disorders and inflammation. Claims 23, 24 and 26-36 have been amended without prejudice from method claims to composition claims, thus obviating this rejection.

The use of compounds and pharmaceutical compositions that are effective in the treatment of autoimmune or inflammatory disorders possibly by inducing 15-lipoxygenase (15-LO) is described in the application, e.g. on page 10, lines 22-25 of the specification. Further, as stated in the Background of the Invention, 15-LO's generalized anti-inflammatory role has been well understood in the art based on clinical observations and experimental studies in vivo and in vitro (page 5, lines 5-8). For example, on page 4, lines 20 to page 5, line 22, the specification discloses that it is well known that activation of 15-LO can lead to hydroperoxidation of arachidonic acid to form 15-S-hydroxyeicosatetraenoic acid (15-S-HETE). 15-S-HETE, in turn, is a specific antagonist of LTB_4-induced chemotaxis of polymorphonuclear leukocytes (PMN). 15-S-HETE also aborts leukocyte activation, abrogates adhesion of PMNs to endothelium and

depresses LTB_4 synthesis by leukocytes. Thus, research indicates that the 15-LO pathway functions to inhibit and limit the intensity and scope of an inflammatory process.

Applicant reserves the right to pursue the method of treatment claims in one or more continuation applications.

Rejections under 35 U.S.C. § 112, Second Paragraph

Original claims 5, 23, 24, and 26-26 were rejected under 35 U.S.C. 112, second paragraph, allegedly because the terms "cycloalkyl", "cycloalkenyl" and "cycloalkynyl" are vague. Similarly, the claims were rejected under 35 U.S.C. 112, second paragraph, allegedly because the terms "heterocyclic", "heteroaryl" and "heteroaromatic" are vague. On the contrary, the terms "cycloalkyl", "cycloalkenyl" and "cycloalkynyl" as well as the terms "heterocyclic", "heteroaryl" and "heteroaromatic" are used throughout the specification and are well understood to those of skill in the art. Further, the "cycloalkyl", "cycloalkenyl" and "cycloalkynyl" moieties of the present invention are defined on page 389, line 13 to page 390, line 13 of the specification. The terms "heterocyclic", "heteroaryl" and "heteroaromatic" moieties of the present invention are defined on page 391, line 30 to page 392, line 26 of the specification.

Original claims 5, 23, 24, and 26-26 were rejected under 35 U.S.C. §112, second paragraph, allegedly because the some of the terms, such as "carbonyl", "sulfonyl" and the like can imply open valences. Applicants respond that those of even below ordinary skill in the art can identify and appreciate an open valence and would not be confused by or fail to understand the meaning of "carbonyl", "sulfonyl", etc as indicating a moiety with a completed valence. There is nothing in the text to suggest that the applicants intended open valence states.

Original claims 5, 23, 24, and 26-26 were rejected under 35 U.S.C. §112, second paragraph, allegedly because the some of the terms, such as "amide", "ester" encompass a wide class of compounds. Applicant would kindly like to remind the Examiner that a term that is broad does not necessarily render the term indefinite. A skilled artisan would be apprised of the metes and bounds of the compounds encompassed by the classes of compounds. There are full

paragraphs in the text with examples of illustrative compounds within each class (page 390, line 20 to page 396, line 8) for the reader's guidance. Applicants submit that they have complied with their duty under 35 U.S.C. Section 112.

Original claims 5, 23, 24, and 26-26 were rejected under 35 U.S.C. §112, second paragraph, allegedly because the term "residue" is unclear. The Examiner's attention is directed to the fact that the amino acids and carbohydrates disclosed comprise numerous free functional groups capable of binding to the compound of the present invention; for example lactose has eight free hydroxyls. The claims do not limit the point of attachment, as the claims are intended to encompass each one of those embodiments. However, for clarity, Applicants have deleted the term "residue".

Original claims 27-32 were rejected under 35 U.S.C. §112, second paragraph, allegedly because the claims improperly depend on claim 25. Applicants have amended the claims to such that the claims do not depend on claim 25.

Original claim 5 under 35 U.S.C. §112, second paragraph, allegedly because the compound claim optionally contained a pharmaceutically acceptable carrier. For clarity, Applicants have deleted the phrase "optionally in a pharmaceutically acceptable carrier" from claim 5, and are prosecuting the pharmaceutical composition in currently amended claim 26.

Conclusion

In view of the amendments to the claims herein, and the remarks, allowance of each of the pending claims is respectfully requested.

The Commissioner is authorized to charge any fees not included herewith associated with this filing to Deposit Account 11-0980.

Respectfully submitted,

Sherry Knowles Reg. No. 36,174

Sherry M. Knowles
Registration No. 33,052

Date: September 8, 2003
KING & SPALDING LLP
191 Peachtree Street
Atlanta, GA 30303
404-572-4628 (Direct Line)
404-572-5145 (Facsimile)